

REMARKS

In the pending Office Action, the examiner rejects independent claims 1, 5, 12, 16, 21, 28, 32, 49, 67, 77, and 83 under §102 as anticipated by Butler (US2002/0131479), and rejects independent claims 8 and 24 under §103 as obvious over Butler in view of Eberhardt (US5754583). In response, the applicants amend the independent claims as shown herein. The amendments specify that the symbols being processed are unknown symbols and that the cross-correlations are determined based on code cross correlations between different spreading codes associated with the unknown symbols. These aspects were part of originally filed dependent claims, e.g., dependent claim 3. The applicants further cancel claims 3, 7, 10, 14, and 18, and amend claims 13, 34, 50, 51, 58, 74, 78, and 84 to conform the claim language to that of the amended independent claims.

The claimed invention reduces intersymbol interference in a symbol of interest by processing unknown symbols received over multiple paths of a multi-path channel. The independent claims despread the unknown symbols over at least one multi-path channel, determine cross-correlations between the different symbols based on code cross-correlations between spreading codes for the different symbols, and combine the despread symbols from different symbol periods using weighting factors determined based on the cross-correlations to reduce the interference. It is important to note that the claimed invention uses the weighting-factor based combining to reduce the interference.

Butler does not teach or suggest combining unknown despread symbols using weighting factors determined based on any type of cross-correlations, much less code-specific cross-correlations as required by the independent claims. Butler does not even use cross-correlations to determine weighting factors. Instead, Butler uses cross-correlations to estimate interference caused by a known pilot symbol, and subtracts the estimated pilot symbol interference from despread data symbols on a desired code channel (see at least ¶s [0102], [0104], and [0109]).

Further, the system in Butler cancels interference before performing any RAKE combining, and thus, before using any potential weighting factors to combine symbols (see Figure 4, where the pilot symbol interference is cancelled in combiner 438, and the RAKE combining occurs in symbol combiner 432). Contrastingly, the claims rely on the weighting factor-based combining step to reduce the interference.

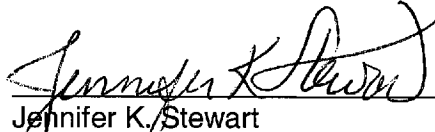
For at least these reasons, Butler does not anticipate any of the independent claims. It should be noted that Eberhardt also does not teach or suggest the above-discussed code cross-correlation or weighting factor determinations, and also that the examiner does not rely on Eberhardt for these aspects of the claimed invention. Thus, Eberhardt does not solve the deficiencies of Butler. Accordingly, the applicants request that the examiner reconsider the §102 and §103 rejections.

The examiner also rejects claims 83 – 89 under §112, 1st paragraph as being subject to an undue breadth rejection. The examiner asserts that independent claim 83 is a single means claim and therefore has undue breadth. It appears that the examiner believes claim 83 is a single means claim because it includes only one element (the receiver circuit). However, single element claims are not the same as single means claims. As noted by the examiner, single means claims are claims “where a means recitation does not appear in combination with another recited element of means.” In other words, a single means claim must be presented in a means plus function format. Further, single means claims are claims that cover every conceivable means for achieving a stated purpose. Contrary to the examiner’s assertions, independent claim 83 is an apparatus claim that does not use means plus function language. Further, independent claim 83 does not cover every conceivable means for achieving interference reduction. Instead, independent claim 83 is limited to a receiver circuit. For at least these reasons, independent claim 83 and all claims depending therefrom meet the requirements of §112. The applicants request reconsideration.

In light of the above remarks and the enclosed amendments, the applicants request reconsideration of all rejections. Should any issues remain, the applicants request that the examiner call the undersigned so that any such issues may be expeditiously resolved.

Respectfully submitted,

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